

ON A COLLECTION OF MOTHS OF THE FAMILY *GEOMETRIDÆ*
FROM UPPER BURMA MADE BY CAPTAIN A. E. SWANN

BY

LOUIS B. PROUT, F.E.S.

(With a Plate)

The following memoir deals with a small section only of a wonderful collection of Heterocera made by Capt. Arthur E. Swann in the Kachin Hills, a few miles from the Yunnan Frontier, almost exclusively through the agency of light. Capt. Swann was stationed for a time (in 1921-23) in an ideal district and one which had not previously been worked by the Lepidopterist and it was at the instigation of our mutual friend the Rev. C. R. N. Burrows that he took up the collecting of the moths. Unfortunately this was not until near the end of the 1922 season, but throughout that of 1923 he worked with great enthusiasm and truly remarkable success, assisted by his equally enthusiastic wife.

The major part of the collection has been presented to the British Museum and, it is to be feared, can only very gradually be made known to Science, there being no staff of specialists available to work it out *en bloc*. The Geometridæ, however, have been very generously presented to me, through the kind offices of Mr. Burrows, to whom, as well as to Capt. Swann, my best thanks are due. As they constitute by far the most important contribution to the Geometrid fauna of British India which has been made since the Lepidoptora of the Khasis were investigated some 30 years ago, I have felt it a duty to Science to work out the collection in detail; the more so because it represents not a selection but a virtually complete record of the visitors to light during the period worked. It is this latter consideration which has induced me to record in all cases the numbers of specimens, together with dates, as also to include the few which, from one cause or another, have not been determinable.

Concerning the head-quarters (Htawgaw Fort) and the other localities in which he collected, Capt. Swann has furnished me with valuable topographical notes, which I cannot do better than reproduce *in extenso*. I have arranged the names alphabetically, for convenience of reference.

Blackrock, 26° 2' N. lat., 98° 35' E. long., 4,760 ft. In oak and pine jungle in Ngawchang Valley. Jungle not very dense.

Chui Haw, 25° 57' N., 98° 38' E., 6,740 ft. A Yawyin village. Topographical details much resemble those given for Kangfang, but it is not in the Ngawchang Valley but in that of the Chui ho Ta, a tributary.

Fenshuiling Pass, 25° 54' N., 98° 40' E., 7,500 ft. A waterlogged, very thickly jungled tract, abounding in ferns, orchids and rhododendrons and every tree festooned with dripping moss. A wonderful spot in many ways, but a most unpleasant one to be in during the rains (i. e. now [July]), as it is infested with leeches—both the mud and water varieties underfoot to crawl into your boots and the green ones above you in the trees to drop upon you adroitly as you pass underneath. Moths were taken at 8,000 ft. at Capt. Swann's camp about 4 miles from the pass.

Hkamkawn, 26° 0' N., 98° 25½' E., 4,080 ft. A Lashi village in the valley of Ngawchang Hka River. Moderately dense jungle. Frost in winter.

Hparè, 25° 50' N., 98° 25½' E., 5860 ft. In valley of Hkainghing Hka River, amongst terraces of wet paddyland. Hills, densely jungled, rising to 10,000 and 12,000 ft. on either side. A Lashi village. Climate similar to Htawgaw.

Hpinmaw Fort on slopes of Irrawaddy (Salween Divide), 6 miles from Yunnan boundary, 26° N., 98° 38' E., 7850 ft. Precipitous country. Sandy soil. Grass-covered slopes with trees, but not so densely jungled as other lower localities.

Htawgaw Fort, Kachin Hill Tracts, 25° 57' N., 98° 22½' E., 6,025 ft. A precipitous spur of soft granite rock covered with pine trees and shrubs such as rhododendrons, wild raspberries, etc. Rainfall 80 inches. Frost and

sometimes snow in winter. Extreme hot weather shade temperature 90° F. The collecting was on the terrace of Capt. Swann's house by the aid of a 300 c.p. lamp.

Kangfang, 26° 8' N., 98° 40½' E., 5,400 ft. A Yawyin village in valley of Ngawehang Hka, at its junction with the Hpawté Hka. Mostly grassy slopes, sandy soil and not densely jungled. Similar to Hpimaw.

Langyang, Kachin Hill Tracts, 25° 57½' N., 98° 18' E., 4,400 ft. On eastern slopes of Pyepat ridge, in densely jungled, precipitous country. Rainfall about 100 inches. Frost in cold weather. Extreme hot weather shade temperature about 95° F. Langyang is a small Lashi hamlet of about 12 bamboo houses.

Laukhaung, 25° 54' N., 98° 11' E., 4,200 ft. A Maru village on western slopes of Pyepat ridge in very densely jungled country—foot hills between Htagaw and the Nmai Hka, 9 miles above the Nmai Chipwi confluence.

Shingaw Hka, 25° 39' N., 97° 53' E., 730 ft. At the junction of the Shingaw River with the Nmai Hka River (the latter is the left upper branch of the Irrawaddy). Very dense jungle and bamboo. Heavy rainfall.

Wausaung, 25° 22½' N., 97° 36' E., 550 ft. A Shan village on Namyin Hka River (tributary of Irrawaddy), 11 miles East of Myitkyina Plains. In very dense jungle.

The general affinities of the fauna, as would be expected, are with that of the north-east Himalayas, of which the Kachin Hills are outliers; but there is also a sprinkling of species which were hitherto only known from the mountains of Szechuan.

The district must be extremely rich. The collection of 1,075 specimens of Geometridæ embraces about 329 different species. The further fact that some 175 of these (or appreciably over one-half) are represented by a single specimen only, suggests that there may be still a large number of species which have escaped detection altogether. It may also be remarked that a considerable percentage of those taken in 1922 did not recur in 1923. A rough comparison with the principal faunistic memoirs of 30 to 40 years ago will also help to bring out the richness of the present collection. Of its 329 species, 95¹ forms are new to science—mostly new species, a few merely sub-species. Mr. Warren's descriptions of new species in the Elwes collection (*Proc. Zool. Soc. Lond.*, 1893) it is true, reached a total of 176, but this collection was the work of some years and of several collectors, and embraced all parts of British India. The Atkinson collection, worked out by Moore in 1888, produced about 158 novelties in the family, the result of many years' collecting and not exclusively in one locality. The fine Hocking collections from Dharmasala (*Ill. Het.*, vii, 1889) included about 189 Geometridæ 44 being described as new and a good many others missed through being wrongly identified; but these were the fruits of three years' collecting. The Nilgiri collections worked out by Hampson (*Ill. Het.*, viii, 1891) were the work of three collectors and totalled 207 geometrid species, 64 new. The same author's Ceylon Catalogue (*Ill. Het.*, ix, 1893) contained 225, but only 2 new. How many new Khasi species were described by Warren and Swinhoe in the nineties, I have not been able to reckon; the number must have been very large, but it was spread over some years.

The 329 species comprise 20 *Hemitheina*, 36 *Sterrhina*, 98 *Larentiina* and 175 *Geometridæ*; the *Enochromina* are entirely unrepresented. The absence of these and the number of the *Larentiina* are in striking contrast to the various tropical Indo-Malayan collections at which I have recently been working, and support previous ideas as to the general dominance of the last-named in temperate and mountain regions. *Perizoma* alone is represented by fourteen species and *Eupithecia* by twelve. Another striking feature is the prevalence of the small Boarmiid species; there are no less than thirty *Ectropis*, mostly small, and about one-third of them are new to science. *Cleora* makes a good second, with 17 species, 5 or 6 new.

As regards the arrangement of the present work, I have followed my own revisions—complete or incomplete—in the first three sub-families, but have left

¹ This figure includes the two which I published in 1923 (*Ann. Mag. Nat. Hist.* [9], xi.), but does not include some half-dozen or more which are referred to in the present memoir, but not named.

the mixed geometrine assemblage (*Boarmiinae*, auctt.) as nearly as possible in the order of Hampson's *Fauna of British India*, Moths, vol. iii, which, with all its faults, remains the only systematic work on the subject. Synonymy is only quoted where there is some special purpose to be served or some vital correction to be made; absence of a citation is neither to be taken as evidence of acceptance nor of rejection. Similarly a name which Hampson had sunk is often resuscitated without comment; his 'lumpings' were so notoriously inaccurate that it is unnecessary to furnish evidence in every case of change. The distribution of the species, too, is generally only given where I have something fresh to add to that which can be found in Hampson or in vol. iv of Seitz's *Macrolepidoptera of the World*. The very many species which appear to be new for Burma are marked with an asterisk.

Finally, a word of praise is due to Capt. and Mrs. Swann for the beautiful condition of the collection. The occasional mention of 'worn,' 'rubbed' or 'torn' specimens is no evidence to the contrary, for they were intentionally sending all their captures, where recognizable; and condition only needs comment where it affects the definiteness of a determination.

Subfam. HEMITHEINÆ.

1. *Archæobalbis* sp.

Hpimaw Fort, 9-13 August 1923, 1 ♀.

Badly torn, especially the hindwings, apparently intermediate in shape, and evidently so in the underside, between *ochreipicta*, Swinh. and *usneala*, Feld., possibly a ♀-form of the former, as it has similar posterior spots on the forewing above. The British Museum Collection has as *ochreipicta* ♀ a closely similar example from Kulu, with the borders beneath slightly more *ochreipicta*-like than in Capt. Swann's specimen. The ♀♀ in this genus seem more rarely to come to light than the ♂♂ and are much less well known at present.

* 2. *Neobalbis elaearia* (Hmps. n.)

Pseudoterpna elaearia Hmps. n. Journ., Bom. Nat. Hist. Society, xiv, 654 (1903) (Darjeeling; Khasis).

Htawgaw, August 1923, 1 ♂.

A rare species, hitherto only known to me—with the exception of the original Darjeeling ♂—from a few Khasi specimens. Hampson has chosen his ♀ (Khasis) for the type, as is shown by the originals in Coll. Brit. Mus., though he has neglected to publish any detail.

3. *Terpna vigil* sp. n. (Pl. 1, fig. 12).

♂ 54 mm. Head and body light brown, tinged above with olive, the body with some admixture of black, especially on side of abdomen; a blackish mark on side of frons; a black spot on tegula (patagium of Hampson). Palpus largely black. Foreleg black, ringed with light brown. Thoracic and abdominal crests strongly developed (section *Dindicodes* Prout). Antennal pectinations extremely short (scarcely 1).

Forewing light brownish olive, sprinkled (at costa more strigulated) with black; a black spot at base; a small oblong costal spot at 5-6 mm.; a dot on M and a thick, rather more distally placed, excurved or horseshoe-shaped mark from SM to abdominal margin indicating the antemedian line; a black cell-spot set in a cloudy orb; postmedian indicated by black vein-dots, slightly connected anteriorly, small posteriorly, curved about R²; some slight subterminal clouding; terminal dots large; fringe with black dots opposite veins.—*Hindwing* rather less elongate than in *crocina* Butl., etc., broadly whitish abnormally, then orange; a large black cell-spot; an almost equally large subterminal spot behind M²; two smaller ones at abdominal margin near tornus; a thick, tapering streak from costa to R², not quite so near termen as that of *crocina*; terminal dots even larger than on forewing, accompanied by some irregular irroration; fringe-dots deep black.

Forewing beneath predominantly orange, with coarse irroration; a very large cell-spot; a large subterminal spot from SC* to beyond R², almost confluent on R² with a smaller and weaker inter-radial one distally; a second

subterminal spot between the medians ; termen and fringe spotted. Hindwing much as above, the pale part scarcely so white.

Hpimaw Fort, June 1923, the type only.

A very fine species, in some measure connecting the subgenera *Dindicodes* and *Absala*.

* 4. *Terpna mölleri* (Warr.)

Dindica mölleri Warr., Proc. Zool. Soc. Lond., p. 349 (1893) (Sikkim).

Hpimaw Fort, 9-13 August, 1923, 1 ♀.

Previously known from Sikkim and the Khasis.

5. *Metallolophia arenaria* (Leech).

Pachyodes arenaria Leech, Tr. Ent. Soc. Lond., p. 144, pl. 9, fig. 12 (1889) (Kiukiang).

Hypochroma danielaria, Oberth., Et. Lép., vii, 291, pl. 173, fig. 1697 (1913) (syn. nov.) (Siao-lou).

Htawgaw, early July 1923, 1 ♀ (large).

Another rarity, though apparently with an extended range in China and Upper Burma.

* 6. *Lophomachia albiradiata* (Warr.)

Uliocnemis albiradiata Warr., Proc. Zool. Soc. Lond., p. 356 (1893) (Naga Hills).

Htawgaw, June, 1 ♂.

An extremely interesting capture, Warren's type ♂ (not '♀', as published) having hitherto remained unique. In Wytzman's 'Genera Insectorum' (*Hemith.*, p. 167) I doubtfully referred it to *Mixolophia*, but the well-developed frenulum brings it into my fourth group and by my Key it will fall into *Lophomachia*—a fairly satisfactory position.

7. *Lophomachia semialba* (Walk.)

Thalera semialba Walk., List Lep. Ins. xxii, 601 (1861) (Sarawak).

Htawgaw, early July 1923, 2 ♂♂.

Both specimens are large and heavily marked. The species extends westward to the Khasis and southward to Sumatra and Borneo and there is a small, greener race in Ceylon (*viridior* Prout, 1916).

* 8. *Comibena swanni* sp. n. (Pl. 1, fig. 3)

♂, 24-25 mm. Head green, slightly mixed with white ; fillet concolorous. Palpus moderate, white, the 2nd and 3rd joints brown on outer side (lost in type). Antennal shaft rather short and broad, the pectinations not very long, the longer (outer) about 4. Thorax green ; abdomen mostly whitish, anteriorly greener, posteriorly pure white. Legs white ; foretibial tuft black-brown ; mid and hind femur and tibia with black-brown spots at middle and end ; hindtibial process nearly reaching end of first tarsal joint. Frenulum very slender.

Forewing bright green, slightly more yellowish than in the genotype and slightly irrorated with white ; costal edge white ; veins extremely finely whitened ; lines white, firm, rather broad ; antemedian well beyond one-third, slightly bent in front of cell-fold ; postmedian straight, about 2 mm. from termen ; terminal line white, with microscopic brown dots between the veins, at least in anterior part ; fringe whitish green, with large chocolate-brown spots opposite the veins except tornally.—*Hindwing* concolorous ; costal margin white ; lines obsolete ; terminal white line almost clear ; fringe-spots rather weaker than on forewing.

Forewing beneath of a similar green, becoming whiter posteriorly, more broadly so tornally ; a black-brown cell-dot ; a white line shortly beyond, less oblique than termen, weakening posteriorly, ending close to the postmedian, which in posterior part shows through faintly from upperside ; a wavy fuscous terminal line, uniting the dots (here well developed) with the fringe-spots, which are also fuscous ; fringe otherwise white, with indications of a second, more slender, wavy line close to tips. Hindwing green ; cell-dot, termen and fringe as on forewing ; postmedian line rather further from cell-dot, stronger, very gently curved (less so than termen).

Htawgaw, July 1923 (type) and August to September 1923 (paratype).

Near *latilinea* Prout (= *theodoraria* Oberth., *El. Lép.* xii (2), fig. 3277, syn. nov.) but without red terminal line and with different underside.

* 9. *Comibæna cenocraspis* sp. n.

♂, 25-26 mm. Extremely like *swanni* Prout (*supra*). Palpus apparently a trifle shorter. Hindtibial process rudimentary. Face whiter (tinged with green above). Wings slightly paler green. Forewing with the white lines slender, the antemedian not bent in cell, the postmedian a little less straight (suggesting the slightest possible inward curve), termen and fringe unspotted, the latter white. Forewing beneath with no cell-dot, the lines of upperside reproduced, the postmedian therefore much more distal than the single line of *swanni*. Hindwing beneath with no cell-dot, postmedian line nearer to termen than to cell.

Hparè, September 1923, 7 ♂♂.

Strongly reminiscent of *Euchloris chlorophyllaria* Hedem., except in the presence of the frenulum. Unfortunately all the examples are more or less worn, so that the colour distinctions from *swanni* must not be unduly stressed; but the differences in the lines and in the fringe are manifest at once. Moreover its build appears somewhat less robust than that of its ally.

10. *Gelasma thetydaria* (Guen.).

Iodis thetydaria Guen., Spec. Gén. Lép. ix, 358 (1858) (Central India).

Hpimaw Fort, 9-18 August 1923, 3 ♀♀.

Already known from India to West China and from the Philippines.

* 11. *Gelasma fuscifimbria* Prout.

Gelasma fuscifimbria Prout, The Entom., xliv, 28 (1911) (Khasis).

Hpimaw Fort, June 1923, 1 ♂.

Not quite typical, the fringes being less darkened, etc., but provisionally referable here.

* 12. *Gelasma dysgenes* Prout.

Gelasma dysgenes Prout, Nov. Zool., xxiii, 13 (1916) (Tibet).

Kangfang, June 1923, 1 ♂.

This determination is likewise far from certain, the example being opaquer than my original series and in some respects more resembling the preceding. The group will require closer study when sufficient material is available.

13. *Gelasma* sp.

Hpimaw Fort, June 1923, 1 ♂.

Smaller and paler than the two preceding, distinctly greener than *fuscifimbria* but a little rubbed and faded. I have compared it carefully with *glauca* Walk. and *albistrigata* Warr. but cannot make it agree with either, though a Wa-shan ♀ placed among *albistrigata* in the British Museum Collection seems the same. I do not venture to describe it at present.

* 14. *Gelasma chromatocrossa* sp. n. (Pl. 1, fig. 1).

♂ ♀, 31-32 mm. Face bright red. Palpus about $1\frac{1}{2}$, little longer in ♀ than in ♂, terminal joint about $\frac{1}{2}$; red, beneath narrowly whitish. Vertex white; occiput green. Antennal shaft white proximally, tinged with pink distally; pectinations of ♂ proximally long (6 to 8). Thorax and abdomen green above, whitish beneath. Legs slightly tinged with pink, the forefemur and foretibia somewhat darkened above; hindtibia of ♂ with the hair-pencil rather slender, no terminal process.

Forewing with apex minutely produced, termen little curved (slightly more so in the ♀); SC¹ anastomosing with C, R¹ just stalked (♂♂) or just separate (♀♀), M¹ shortly stalked; green (less bluish than in the *Thalerura* group) with costal edge pink; a deep green cell-dot; lines more olivaceous green; antemedian obsolescent; postmedian denticulate, not distinct, vaguely pale-edged distally; a series of dark terminal dashes, well separated at the veins; fringe pink, with dark spots at vein-ends—Hindwing fairly

broad, the tail at R^3 moderate; cell-dot rather strong; postmedian with the usual teeth at R^3 and M^1 about equal; termen and fringe as on forewing.

Underside slightly paler, especially on hindwing; forewing with the pink costal margin proximally broader, costal edge of hindwing also narrowly pink; markings obsolete, or the cell-dots very feebly indicated; termen and fringe as above.

Htawgaw, June to July, 1923, 2 ♂♂; Hpimaw Fort, early July 1923, 1 ♀.

* 15. *Thalassodes aptifimbria* Prout.

Thalassodes aptifimbria Prout, Nov. Zool., xxiii, 207 (1916) (Darjeeling).
Htawgaw, August 1923, 1 ♀.

* 16. *Hemithea distinctaria* (Walk.)

Thalassodes distinctaria Walk., List Lep. Ins., xxxv, 1607 (1866) (N. India).
Hpimaw Fort, June 1923, 1 ♂.

Perhaps represents a separable race, the costal edge of the forewing being somewhat redder, the markings of the abdomen slightly restricted. The name-typical form is common in Sikkim, while the Khasis produce a race which I have named *laeta*, *Ann. Mag. Nat. Hist.* (8) xx, 173, pl. 7, fig. 18.

* 17. *Iodis ctila* sp. n.

♂, 29-31 mm. Face dull green, discolouring towards orange. Palpus $1\frac{1}{2}$, 2nd joint slightly upcurved, with slight terminal tuft above, 3rd joint moderate, porrect; above as face, beneath white proximally. Vertex white; occiput pale green. Thorax and abdomen pale green above, dirty white beneath. Hindtibia with the terminal spurs short; hindtarsus rather over $\frac{1}{2}$.

Forewing with SC^1 just from cell (2 specimens) or about connate (3), closely approaching or anastomosing C, R^1 rather well stalked, M^1 connate or just separate; very pale olive-greenish, in some lights opalescent; costal edge pale ochreous; cell-dot slightly darkened, quite inconspicuous; lines fine, white; antemedian nearly obsolete except posteriorly, weakly bisinuate; postmedian obsolescent costally, faintly crenulate and very slightly incurved in anterior part, still less crenulate (virtually straight) and about parallel with termen in posterior.—*Hindwing* rather broad for an *Iodis*, the tail at R^3 not very long or acute; M^1 stalked; nearly as forewing but with the postmedian equally distinct throughout, weakly bent about R^3 — M^1 .

Underside opalescent whitish.

Hpimaw Fort, June 1923, 4 ♂♂; Htawgaw, 1 ♀ received at the same time (just possibly erroneous in the labelling). Also 2 ♂♂, 1 ♀ from Hpimaw Fort 14-18 August, 1923, rather smaller, evidently representing a second brood; ♀ palpus smoother, with terminal joint more elongate (nearly 1). I refer here further two faded ♀♀ from Turzum Tea Estate, Nagrispur (O. Lindgren) sent by the Agricultural Research Institute, Pusa.

Near *xynia* Prout (*Nov. Zool.*, xxiv, 301) in coloration, etc., much broader winged, forewing with SC^1 not anastomosing with SC^2 , postmedian line more proximal, less dentate, hindwing with tail shorter. From *delicatula* Warr. the obsolescence of the cell-dots immediately distinguishes it; also larger, broader-winged, greener, the postmedian line less crenulate.

* 18. *Iodis lara* sp. n.

♂, 26 mm. Closely allied to the preceding, possibly a form of it, though the palpus appears (very slightly) shorter and the venation is rather different. Face clearer green. Thorax and wings more bluish green than in that species, the wings perhaps slightly more delicate, more translucent.

Forewing with termen slightly more oblique in *ctila*; SC^1 about connate, anastomosing shortly with C and with SC^2 . DC^3 oblique posteriorly, M^1 well separate; lines at least as fine as in *ctila*, cleaner white, the antemedian distinct almost to costa, oblique in the opposite direction to postmedian; postmedian almost parallel with termen throughout.—*Hindwing* with apex slightly sharper than in *ctila* (termen anteriorly not so fully rounded); DC^3 strongly oblique, M^1 just separate; lines very fine, fairly distinct.

Laukhaung, 10, March 1923, 1 ♂ in excellent condition.

In tone and extreme delicacy comparable to *delicatula* Warr., but without the cell-dots, the postmedian less crenulate.

19. *Iodis argutaria* Walk.

Thalera argutaria Walk., *List. Lep. Ins.*, xxxv, 1614 (1866) (N. India).
Hpimaw Fort, June 1923, 1♂, 9-13 August, 1923, 1♀. Seems to be distributed from North India to Formosa.

* 20. *Comostola virago* sp. n.

'*Comostola subtiliaria* Brem.' Prout in Seitz *Macrolep.* iv, 33 (1913) (excl. fig.)

♂, 23-24 mm.; ♀ 24-28 mm. Face whitish green, with upper third bright red. Palpus short for the genus (in ♂ $1\frac{1}{4}$ in ♀ $1\frac{1}{2}$), with terminal joint proportionally reduced. Antenna pectinate in both sexes, the branches in the ♀ about 4, in the ♂ scarcely less. Crown green, mixed with white at anterior edge of fillet. Hindtibia of ♀ not dilated.

Forewing broad, apex sharp, termen almost straight; DC only moderately characteristic, SC¹ connate or just stalked, rarely anastomosing with C, R¹ stalked beyond it; bright green, slightly more bluish than in *mundata* Warr.; costal margin whitish buff, not spotted; pattern normal, cell-spot moderate, roundish, red mixed with black, with a white pupil and fine white circumscription; the lines of white dots rather creamy, obsolete anteriorly, otherwise rather strong (at least the postmedian), scarcely touched with red at their edges; the postmedian strongly bisinuate as in *mundata*; terminal red line extremely fine.—*Hindwing* with termen rather full, only very weakly bent in middle; cell-spot rather larger; postmedian similar.

Underside much paler, forewing proximally suffused with red-grey, especially near costa.

I have long had this species in manuscript, having discovered that it is not Bremer's Ussuri species (which has longer 3rd joint of palpus and longer ♂ pectinations) and have selected as type a fine ♀ from the Khasis, April 1896, in coll. Tring Mues. Its range extends from Sikkim to West China.

Htawgaw, August 1923, 1 ♂.

Subfamily. Sterrhinae.

* 21. *Rhodostrophia similata* (Moore)

Phyletis similata Moore, *Lep. Coll. Atk.*, p. 264 (1888) (Khasis).

Laukhaung, 15, March, 1923, 1 ♀; Htawgaw, April to May 1923, 1 ♀.

* 22. *Organopoda brevipalpis* sp. n. (Pl. 1, fig. 7.)

♂, 29-31 mm.; ♀, 33 mm. Face deep red. Palpus shorter than in the other species, scarcely over 1, with terminal joint $\frac{1}{2}$ ¹; red above, more ochreous beneath. Antennal ciliation rather over 1. Vertex white; occiput reddish. Thorax and abdomen concolorous with wings. Hindleg much as in *carnearia* Walk., the tibial tuft of the ♂ perhaps less dense.

Forewing with apex slightly sharper than in the other species; SC² from cell (only in the left wing of the single ♀ about connate with SC³⁻⁵); coloration as in *carnearia* or very slightly darker; markings the same (the 'cell-mark, which Hampson, *Faun. Ind. Moths*, iii, 451, calls a 'dark speck,' forms in both species a very diminutive annulus, there being a few whitish scales in the centre).—*Hindwing* with the discal annulus smaller than in *carnearia*; a median shade indicated across or just beyond it, always quite weak.

Underside slightly less pale than in *carnearia*, otherwise similar; hindwing with the cell-mark smaller, the median shade indicated, the postmedian line rather less incurved at the radials than in *carnearia*.

Htawgaw, early July 1923, type ♂ and 5 others; Hpimaw Fort, June 1923, 1 ♀, 14-18 August, 1923, 1 ♂.

According to the palpus this species should have been in *Discoglypha*, but in that genus, so far as is yet known, SC² of the forewing is invariably stalked with SC⁵, not to mention that the cell-mark is *punctiform*. In order to obtain

¹ I cannot understand Dr. Turner's measurements: (*Proc. Linn. Soc., N. South Wales*, xxxii, 683) for *olivescens* Warr. ♂— $1\frac{1}{4}$, terminal joint $\frac{1}{2}$ ¹; in my series it is fully $1\frac{1}{2}$ for the ♀, fully $1\frac{3}{4}$ for the ♂, with terminal joint $\frac{1}{2}$ to $\frac{3}{4}$; in the hitherto known Indian species, considerably longer still.

further taxonomic evidence, however, I have submitted the ♂ genitalia to the Rev. C. R. N. Burrows, who finds it a true *Organopoda*, though distinct in the smaller size of the parts and in other details.

23. *Synegiodes hyriaria* (Walk.)

Anisodes hyriaria Walk., *List. Lep. Ins.*, xxxv, 1617 (1866) (N. India).

Hpimaw Fort, August, 1923, 1 ♂, 5 ♀♀; Hparè, late August, 1923, 2 ♀♀; also a ♀ handed over by the British Museum merely labelled 'Htawgaw.' Range: North India to West China.

* 24. *Calothysanis correspondens* (Hmps.)

Timandra correspondens Hmps., *Faun. Ind. Moths*, iii, 459 (1895) (Dharmasāla).

Laukhaung, April 1923, 1 ♀.

A rather weakly marked specimen of this Himalayan species, which further extends its range eastward to Tonkin.

25. *Calothysanis* sp.

Laukhaung, July 1923, 1 ♂, 1 ♀.

Near *convectaria* Walk. (*List. Lep. Ins.*, xxiii, 800) but rather pale, the fringe almost as pale as in *comptaria* Walk. (*op. cit.*, xxvi, 1615); possibly a form of one of these species or of the following.

* 26. *Calothysanis oligoscia* (Prout)

Timandra oligoscia Prout, *Nov. Zool.*, xxv, 79 (1918) (Tibet).

Kangfang, September–October, 1923, 1 ♂; Hpimaw Fort, 9–13 August, 1923, 1 ♀.

The ♂ seems to fit well as a small second-brood example of my *oligoscia*, which occurs also on Omei-Shan. The ♀, likewise small, is a beautiful aberration with the pink markings broadly diffused, such as sometimes occurs in *C. amata* Linn. and a few other species, and its reference here is somewhat conjectural.

* 27. *Anisodes absconditaria* Walk.

Anisodes absconditaria Walk., *List. Lep. Ins.*, xxvi, 1513 (1862) (South India).

Hpimaw Fort, June 1923, 1 ♀.

Rather pale (but worn) and not very long-winged, possibly referable to the closely allied *clandestina* Prout (*Ann. Mag. Nat. Hist.*, (9) ii, 414). Both are widely distributed in India and Malaya and there is probably work waiting to be done regarding their geographical variation.

28. *Anisodes* sp. n.

Htawgaw, August, 1 ♀.

In this genus, where the species are often so similar in pattern and the ♂ structure of such paramount importance, I abstain from describing from a single ♀.

* 29. *Scopula segregata* Prout.

Scopula segregata Prout, *Ann. Mag. Nat. Hist.*, (9) iv, 280 (1919) (Teng-yueh-ting).

Htawgaw, early April 1923, 2 ♂♂.

The 2 ♂♂ in coll. Joicey, from which I described this very distinct though unpretentious little species, have hitherto remained unique.

* 30. *Scopula ferrilineata* (Moore) (??)

Runeca ferrilineata Moore, *Lep. Coll. Atk.*, p. 252, pl. 8, fig. 13 (1888) (Darjiling).

Hkamkawn, June 1923, 1 ♀.

A large form or almost certainly close relative, too rubbed to describe. Hindwing with termen rather more rounded, median shade of forewing apparently less oblique, etc.

Scopula ferrilineata is known from Sikkim and Assam and I have seen a race (?) from Tonkin, while *rantaizanensis* Wilem. (*The Entom.*, xlviii, 82), from Formosa, is also closely similar.

* 31. *Scopula bispurcata* (Warr.)

Craspedia bispurcata Warr., *Nov. Zool.*, v, 239 (1898) (Khasis).

Htawgaw, April, 1 ♂.

The specimen is very slightly larger than the typical Khasi form. The species has also occurred in Ceylon.

* 32. *Scopula marcidaria* (Leech)

Acidalia marcidaria Leech, *Ann. Mag. Nat. Hist.*, (6) xx, 99 (1897) (W. China).

Hipimaw Fort, June, 1 ♀.

* 33. *Scopula unisignata* sp. n.

♂, 19 mm. Face white. Palpus blackish on outer side, white beneath. Vertex and thorax white. (Abdomen partly discoloured, probably all white). Foreleg with some smoky suffusion.

Forewing not broad, apex moderately acute, termen oblique, gently curved posteriorly; SC¹ from apex of areole; white, with a few scattered black scales; proximal markings apparently obsolete; postmedian line faint, light-brown, marked with blackish dots on the veins, those at costa and hindmargin larger; markedly oblique outward from about five-sevenths costa, sharply angled on R¹, incurved between this and R³, slightly excurved between R³ and M², posteriorly slightly more oblique inward than termen; faint double brownish subterminal lines; black interneural terminal dots only distinct anteriorly; fringe white.—*Hindwing* with termen very faintly waved, a scarcely noticeable concavity between R¹ and R³; a large subtriangular black cell-spot, extending the length of DC²⁻³ and with its apex at R²; a brown median shade from middle of abdominal margin to base of M¹, then incurved, just proximal to cell-spot, obsolete in front of SC; postmedian formed much as on forewing, not so oblique anteriorly; outer area much as on forewing.

Underside white.

Hparè, September 1923, the type only.

The forewings may be a little rubbed, but can never have been strongly marked; the fringes are rather long. The shape of the postmedian line recalls that of the Neotropical *impropriaria* Walk. The large cell-dot of hindwing is characteristic.

34. *Scopula* sp. n.

Hipimaw Fort, 9-13 August, 1 ♂.

Both the forewings are unfortunately too rubbed and torn to allow of a complete description, but as the specimen is otherwise sound and is well distinguishable from any other known to me I append a brief description, in order that the faunistic record may be established whenever the species is met with again.

Expanse about 27-28 mm. (both tips lost). Face black. Vertex pale. Antennal joints scarcely projecting; the fascicles of cilia long (about 2); shaft with blackish dots. Abdomen dorsally suffused with grey. Hindtibia rather strongly dilated, the hair-pencil tinged with fuscous; tarsus about $\frac{1}{2}$.

Wings rather broad and not very smooth-scaled, suggesting a transition between the *marginipunctata* and *nesciaria* groups, the hindwing scarcely appreciably bent at R³; the pale ground-colour suffused with brown, the blackish irroration moderate; cell-dots black; lines brown, with blackish spots on the veins; antemedian of forewing traceable from cell (not quite 2 mm. from cell-dot) to hindmargin, as oblique as termen; postmedian of forewing rather distally placed, rather deeply incurved at fold; that of hindwing less curved than termen, incurved between the radials; both with the black spot on SM² strengthened; terminal dots strong. Underside weakly marked.

* 35. *Scopula butyrosa* (Warr.) (?)

Idea butyrosa Warr., *Proc. Zool. Soc. Lond.*, p. 362 (1893) (Sikkim).
Laukhaung, July 1923, 1 ♂ (worn). Known from Kulu, Sikkim and Assam.

* 36. *Scopula complanata* (Warr.)

Ptychopoda complanata Warr., *Nov. Zool.*, iii, 313 (1896) (Khasis).
Htaungaw, early July 1923, 1 ♀; Laukhaung, July 1923, 2 ♂♂.
Range about as with the preceding species.

* 37. *Scopula undulataria* (Moore) (?)

Idea undulataria Moore, *Lep. Coll. Atk.*, p. 252 (1888) (Darjiling).
Laukhaung, 10, March, 1913, 1 ♂.
Rather large and heavily marked.
Known from Sikkim and Assam. It is just possible that *undulataria* and *complanata* may prove forms of a single species and that the present example may be a seasonal or climatic form, hitherto unknown to me.

* 38. *Scopula quinquestriata* (Warr.) (?)

Ptychopoda quinquestriata Warr. *Nov. Zool.*, iii, 314 (1896) (Khasis).
Htaungaw, July 1923, 1 ♀.
Worn, appearing whiter than typical *quinquestriata* and with the cell-dot of forewing obsolete. I only know the species definitely from the Khasis.

* 39. *Scopula detentata* sp. n.

♂, 26-31 mm. Face black, only whitened at extreme lower edge. Palpus black, beneath whitish buff. Antennal shaft more or less mixed with black from near base to beyond middle; joints scarcely projecting, the fascicles of cilia well over 1. Collar ochreous brown. Thorax and abdomen concolorous with wings, the abdomen above with faintly greyer suffusion except at ends. Legs concolorous, the hindtibia and its pencil whitish; hindtibia less long than in *patularia* and *straminea*, measuring not quite 4 mm, tarsus 1 mm.

Forewing shaped as in *nesciaria* Walk. (*List. Lep. Ins.*, xxii, 750); areole rather small, SC¹ stalked beyond its apex; whitish brown, with a tinge of buff *moderately irrorated, with the usual markings of the group (Hampson, *Faun. Ind. Moths*, iii, fig. 200); antemedian line rather faint; cell-dot sharp; median shade moderate (the proximally bent costal end weaker), gently incurved between M¹ and SM²; postmedian slightly punctuated with black on the teeth, markedly incurved between the radials; subterminal weak but generally continuous; terminal dots small, but better developed than in most *straminea* Warr.; fringe virtually unmarked.—*Hindwing* with termen slightly bent in middle; median shade more incurved proximally to cell-dot than in Hampson's fig. 200; postmedian incurved between the radials, not or scarcely punctuated on the vein-teeth; distal area as on forewing.

Underside glossier and more whitish, not irrorated; forewing in proximal half with fleshy grey suffusion except behind fold, costally at base rather darker grey; its median shade, and especially the postmedian line, fairly strong except at hindmargin; hindwing with cell-dot and weak postmedian; terminal dots on both wings stronger than above, connected by a very fine and very faint brownish line.

Laukhaung, July 1923, type ♂, April-May 1923, 2 ♂♂. Also fairly common in Sikkim and Assam.

I separated this species several years ago in the Tring Museum, but postponed publishing it and several others in this excessively difficult group in the hope of being able to work at them more exhaustively. In the species which I determine as *attentata* Walk. (founded on a ♀ from Moulmein, but occurring very generally in the Indo-Malayan Sub-region) the hindtarsus is $\frac{1}{3}$ tibia, the

* About as in most of the *nesciaria* group or as in *nigropunctata* Hufn., etc. These common *Scopula* tints—comprehensively termed 'whitish ochreous' by Meyrick and others—seem entirely omitted from Ridgway's 'Color Standards and Nomenclature.' Perhaps his 'cartridge buff' is the least unlike the tone of the present species.

average wing-expanse less than in *detentata*, the tone a little warmer, the markings (except cell-dots) rarely strong, the underside less marked, etc.

A larger ♂ taken with the above, and a similar ♀ from Htawgaw, April-May 1923, differ in their partly blackened foreleg and the ♂ seems to have a rather longer hindleg; they must, however, await more material.

40. *Scopula patularia* (Walk.)

Acidalia patularia, Walk., *List. Lep. Ins.*, xxxv, 1633 (1866) (sine loc.)

Trichoclada opsinararia Swinh., *Tr. Ent. Soc. Lond.*, p. 15 (1892) (Khasis).

Htawgaw, July 1923, 1 ♂; Laukhaung, July 1923, 1 ♀.

Both the examples are rather worn, but they seem quite to agree with *patularia* in structure and markings.

41. *Scopula brachypus* sp. n.

♂, 36 mm.; ♀, 34 mm. Near the preceding. Antennal teeth and ciliation in ♂ slightly longer. Hindtarsus of ♂ extremely short ($\frac{1}{8}$). Forewing with apex minutely produced; colour and scheme of markings quite as in *patularia*, the postmedian line perhaps less slender, not sharply defined, the subterminal shades fairly well developed, the subterminal itself expanding somewhat at fold; termen with minute but sharp interneural dots. Hindwing less quadrate than in *patularia*, the termen not bent in middle; cell-dot larger; median line proximal to it, not noticeably sinuate in cell; terminal dots as on forewing. Underside distinguishable at a glance, the terminal line of both wings being replaced by sharp, isolated interneural dots; hindwing with the postmedian obsolete (usually well developed in *patularia*).

Hpimaw Fort, 14-18 August 1923, 1 ♂, 1 ♀ (a worn ♂, also August, rather smaller, likewise belongs here by shape and structure).

In *patularia* I have always reckoned the hindtarsus to measure $\frac{1}{4}$ or rather over, but the distinction is so small that I should not have insisted upon it apart from the other differences. The only other species of the group with minute hindtarsus is the smaller and much paler *straminea* Warr., with termen of forewing rather straighter, of hindwing very slightly bent, lines straighter (especially the postmedian of hindwing), terminal dots weak, etc. Unless these should prove seasonal variations, the validity of *brachypus* seems therefore well assured.

* 42. *Scopula straminea* (Warr.)

Craspedia undulataria ab. *straminea* Warr. *Nov. Zool.*, iii, 310 (1896) (Shillong).

Craspedia undulataria ab. *pulverosa* Warr., *Nov. Zool.*, iii, 311 (1896) (ab.?) (Khasis).

Laukhaung, April-May 1923, 2 ♂♂; Hpimaw Fort, June 1923, 1 ♂.

Hampson (*Faun. Ind. Moths.*, iii, 433) lumped together under the erroneous name of *remotata* Guen. about eight species, all but one (*invalida*) of the present genus but not one of them bearing any close relationship to Guenée's little species (cf. Prout, *Ent. Mitt.*, iii, 242, *Seitz Macrolep.*, iv, 59, Oberth., *Et. Lép.*, xii, 170, pl. cccxcix, fig. 3407). It is therefore not surprising that he has sunk still other species in his Supplements (vide *Journal, Bombay Natural History Society*, xii, 82). But I do not understand why Warren, who had a better eye for species, should have regarded his *straminea* and *pulverosa* as aberrations of the smaller, whiter and in several respects quite dissimilar *undulataria* Moore—unless, indeed, he had misidentified the last-named. Bearing in mind, however, that he understood by '*remotata* Guen.' *nesciaria* Walk., *attentata* Walk. and their closest allies, his particulars (*loc. cit.* pp. 310, 311) render *straminea* more than a nomen nudum and with the addition of the note on leg-structure which I have given under *brachypus* the species, as I at present know it, will become intelligible. Of the name-typical (scarcely irrorated) form I know but few examples, though these occur in Sikkim (Mongpo) and Burmah (Bernardmyo) as well as in Assam. A commoner form, looking greyer on account of its stronger irroration, can fairly safely be referred to it as an aberration, agreeing in shape and structure and presenting in the Khasis some rather intermediate examples; its range is about the same and to it belong Capt. Swann's captures. A third form,

rather more doubtfully conspecific, is *pulverosa* Warr., founded on a peculiar, slightly pinkish specimen which has remained unique. ('ab.' (!) *subcarnea* Warr. *loc. cit.*) is a quite different species, with the hindtarsus more than half as long as the tibia.

* 43. *Sterrha semilinea* (Warr.)

Ptychopoda semilinea Warr., *Nov. Zool.*, iii, 414 (1896) (Khasis).
Htawgaw, April-May 1923, 1 ♂, 1 ♀.

* 44. *Sterrha muricolor* (Warr.)

Ptychopoda muricolor Warr., *Nov. Zool.*, xi, 488 (1904) (Tonkin).
Htawgaw, April-May 1923, 1 ♂, 1 ♀, early July, 1 ♂.

Warren founded this species on a single ♂ collected by Fruhstorfer in the mountains of Tonkin (2,000-3,000 feet), associating with it a much worn ♀ which clearly does not belong, but looks to me an ordinary *actiosaria* Walk. The first Htawgaw pair are paler and less unicolorous than the type but apparently conspecific, the July ♂ larger and whiter still, with the markings very weak. I have noted possible records from localities as remote as Borneo and Formosa, which may indicate a widely distributed but rare and much-overlooked species, but much more material will be needed for its elucidation.

* 45. *Sterrha ingloria* sp. n.

♂, 22-25 mm. Face blackish fuscous. Palpus small; brown, blackish-mixed on outer side. Tongue well developed. Antennal joints not appreciably projecting; ciliation even, slightly over 1. Crown dirty white. Collar brown. Thorax and abdomen concolorous with wings; abdomen rather elongate. Hindleg somewhat bent, tarsus about $\frac{3}{4}$ tibia; tibia with long, strong tufts reaching nearly to end of tarsus.

Forewing with apex moderately sharp, termen oblique, slightly more curved posteriorly than anteriorly, SC¹ stalked well beyond areole; bone-colour with a tinge of wood-brown, not very opaquely scaled, with slightly darker irroration; lines weakly darker; antemedian slender, indistinct, about midway between base and median, incurved between M and SM²; median-thicker, just beyond the minute blackish cell-dot, very gently excurved anteriorly and incurved posteriorly; postmedian slender, scarcely crenulate, nearly parallel with termen (slightly further therefrom anteriorly than posteriorly), the radial and submedian sinuities very slight; pale subterminal line very indistinct, irregularly sinuous (much as in *actiosaria* Walk.), the shades which bound it very faint; fringe slightly paler, unmarked, or with the faintest possible indication of darker proximal dots.—*Hindwing* with termen smooth, rounded (only slightly less so between the radials); SC²-R¹ stalked to about one-half; antemedian wanting; the rest as on forewing, the median shade curving round proximal side of cell-dot, the postmedian sinuities rather more pronounced than on forewing.

Forewing beneath rather strongly suffused as far as the median shade; underside otherwise nearly as upper.

Hpimaw Fort, June 1921, 7 ♂♂.

Near *indeterminata* Warr. (*Nov. Zool.* viii, 25, Simla), but darker, browner, with more strongly marked median shade, more suffused forewing beneath, etc.

* 46. *Sterrha semisericea* (Warr.)

Ptychopoda semisericea Warr. *Nov. Zool.*, iv, 60 (1897) (Khasis).

Hkamkawn, June, 1923, 1 ♀.

I am not certain that this is anything more than a rather pale, glossy, short-winged form of the following. I have similar examples from Kurseong, Sikkim.

47. *Sterrha actiosaria* (Walk.)

Acidalia actiosaria Walk., *List. Lep. Ins.*, xxii, 750 (1861) (Ceylon).

Htawgaw, 4-10, April, 1 ♀, April-May 1923, 2 ♂♂, 8 ♀♀, early July, 1923 1 ♂, 4 ♀♀, later July, 1 ♂, 1 ♀, August 1923, 4 ♂♂, 5 ♀♀, undated, 1 ♀; Hpimaw Fort, June 1923, 1 ♀, early July 1923, 1 ♀ (very worn), 9-13 August, 1923, 2 ♀♀, 14-18 August 1923, 1 ♀; Hparè, end of August 1923, 3 ♀♀.

It has been assumed hitherto that almost all the Indo-Malayan *Sterrrha* with the heavily tufted hindtibia belong to a single, rather variable species and I am not yet in a position to say that this may not be the case, although I have made occasional desultory attempts to unravel the tangle. Its range, in this sense, would be a very wide one—Ceylon, India, China, Tonkin, Malay Peninsula, Borneo, Java, Bali, ? Sambawa, ? Saleyer, ? Celebes, ? Talaut. The variations in the tone of colour and the strength of the markings, even in a single locality, would not be greater than in several other species of the genus, but the differences in breadth of wing are suspicious; yet the occurrence of some intermediates makes sortation very difficult until some thorough anatomical investigation can be taken in hand. At a very small contribution to the possible future elucidation of the assemblage, I give a few notes on Capt. Swann's captures. The early specimens from Htawgaw (up to July) vary much in size, but might be called on an average fairly large; the wings are rather elongate, the coloration generally rather warm. The April-May ♂♂ (one especially) show in the hindtibial tufts a considerable admixture of dark greyish fuscous, which is less manifest in the July specimens. The August specimens from the same locality are all small and the ♂♂ look a trifle broader winged and have the postmedian line rather sharper—in fact altogether somewhat suggest the *Xenocentris* group; the tibial tufts again show a little variability in colour. The Hpimaw Fort specimens are of medium size, on the whole rather pale and clearly marked. The Hparè, on the other hand, rather large and dusky.

48. *Sterrrha* sp. (vix praec. ab. ?)

Htawgaw, April-May, 1923, 1 ♂.

Very small, rather pale and still more *Xenocentris*-like than any of the above, perhaps related to *decidua* Warr. (Nov. Zool., vii, 107) and *denudaria* Prout (Seitz *Macrolep.*, iv, 127.)

49. *Sterrrha* sp.

Htawgaw, April-May 1923, 1 ♀; Fenshuiling Pass (4 miles from) early July 1923, 1 ♀.

Perhaps the Indian race or representative of *invalida* Butl. (Japan). I have seen the same form (or nearly so) from Assam.

* 50. *Sterrrha aequisinuata* (Warr.)

Ptychopoda aequisinuata Warr., Nov. Zool., v, 242 (1898) (Khasis).

Htawgaw, April-May 1923, 1 ♀.

Excepting a very poor specimen from Bhutan (in *Coll. Brit. Mus.*), I have only seen this species from the Khasis.

* 51. *Sterrrha castelli* sp. n. (Pl. 1, fig. 9.)

♂♀, 21–22 mm. Face black. Palpus blackish. Tongue fairly long. Vertex and base of antenna white; antenna in ♀ slightly, in ♂ more strongly dentate, in the latter with fascicles of slender cilia, well over 1. Thorax and abdomen colorous with wings, above mixed with black-grey, especially on wing-tergulae. Hindtibia in ♂ slightly swollen, especially posteriorly (where it is clothed with a hairtuft much as in *protensa* Butl.); tarsus over $\frac{1}{2}$; a long pencil from femorotibial joint, reaching well beyond middle of tarsus.

Forewing with apex acute, termen almost straight, scarcely noticeably sinuate inward in anterior part; areole moderately long, SC^1 from its apex or stalked just beyond, R^2 well before middle of DC; ochreous, more fleshy or rufous than in *protensa*, with minute dark irroration; base and proximal part of costa darkened; antemedian line indistinct, oblique; cell-mark not very conspicuous; median shade just beyond, nearly straight; postmedian sharper, placed as in *protensa*; very faint indications of dark subterminal clouding in the radial and submedian areas; a thin dark terminal line in the ♀♀, less strong than in the nearest allies, in the ♂ partly obsolescent.—*Hindwing* with termen slightly sinuous; median shade continued, just proximal to the cell-dot; postmedian fine, more irregular than on forewing, somewhat angled outward on most of the veins, especially on R^1 , sinuate inward between R^1 and R^3 ; terminal line as on forewing.

Underside paler, the forewing suffused with smoky shading in and around cell ; cell-dots and postmedian line nearly as above, terminal line often almost obsolete.

Hpimaw Fort, 14-18, August 1923, type ♂ and 3 ♀♀, 9-13 August 1 ♂, early August, 1 ♀ (rather broad-winged) ; Hparè, September 1923, 1 ♀ (worn, with the vertex appearing less white).

The British Museum possesses a closely similar ♀ from Sikkim, August 1909 (F. Møller), rather more darkly shaded (e. g., costally), rather less rufescent in tone and with the median shade of the forewing crossing the cell-dot ; probably conspecific.

* 52. *Sterrha acuminata* (Moore)

Janarda acuminata Moore, *Lep. Coll. Atk.*, p. 265 (1888) (Darjeeling).

Htawgaw, 4-10, April 1923, 1 ♀.

Differs from Moore's type in some minor details, the vertex being slightly browner, the termen of forewing perhaps scarcely so oblique, the median shade heavier, especially on hindwing, the postmedian slightly stronger, the terminal cloud less developed. From *castelli* it differs in its rather differently shaped wings, its coloration and especially the heavily blackened termen.

* 53. *Sterrha falcipennis* (Warr.)

Idaea falcipennis Warr., *Proc. Zool. Soc. Lond.*, p. 362, pl. xxxii, fig. 11 (1893) (Sikkim).

Laukhaung, April-May 1923, 1 ♀.

* 54. *Sterrha rubridentata* (Warr.)

Eois rubridentata Warr., *Nov. Zool.*, iii, 112 (1896) (Khasis).

Htawgaw, April-May 1923, 1 ♀.

More purple (less rosy) than in the examples from the Khasis—hitherto the only known locality.

* 55. *Sterrha lamprotis* sp. n. (Pl. 1, fig. 8).

♀, 21 mm. Face black. Palpus slender, on outside black. Vertex, antenna and thorax pale (as costal part of forewing) ; collar brown. Abdomen above blackish. Legs pale, the foreleg tinged with fuscous. Wings rather broad, shaped much as in *Lipomelia subusta* Warr., the colours also similar, but with the ground-colour of the forewing slightly paler and still more glossy.

Forewing with areole ample ; an ill-defined purplish-fuscous (slightly black-speckled) hindmarginal cloud as far as the median shade ; a brown shade between this cloud and cell ; lines blackish, the antemedian only showing on the brown shade ; postmedian weak except towards hindmargin, excurved between R^2 and M^2 , strongly inangled just behind M^2 ; median shade brown, just beyond the curved, brown cell-mark, somewhat confluent with it ; a sinuous brown band outside the postmedian ; fringe long, glossed with blue-whitish ; extremely minute blackish dots at its base. — *Hindwing* predominantly purple-fuscous, in proximal half irrorated with black ; cell-mark black, placed on a slightly paler brown shade and continued as a very fine, slight, sinuous blackish line to hindmargin ; proximal hereto a blackish median band, which is slightly angled outward about M^2 ; terminal area very narrowly pale (like ground-colour of forewing) ; fringe as on forewing.

Underside less variegated ; pale brown-grey, with cell-marks (on hindwing concise), vague dark median band and band beyond the postmedian ; forewing also with the postmedian itself fairly well defined and reaching the costa, and with some slight proximal suffusion.

Htawgaw, August 1923, the type only.

* 56. *Sterrha ocnere* sp. n.

♂♀, 17-20 mm. Superficially similar to *vacillata* Walk. (*List Lep. Ins.* xxvi, 1608, = *phoenicozona* Hmps. (*Tr. Ent. Soc. Lond.*, 1895, p. 313), the coloration almost identical, only with the body a little darkened, the borders of the wings duller grey-purple. Palpus slender. Antennal ciliation of the ♂ slightly over 1. Hindleg of ♂ short (the tibia+tarsus very little longer

than the femur), clothed with long hair-like scaling, but without the heavy tufts of *vacillata*.

Forewing, as in *vacillata*, with SC^1 stalked beyond the areole; costa similarly spotted; proximal half of wing with the wavy purple lines variable but scarcely ever condensing into bands; terminal band not, or only bluntly, produced proximally on R^2 , but forking about R^1 , a proximal line running direct to the costa, a narrowed band (much as in *vacillata*) to the apex.—*Hindwing* rather less elongate at midtermen than in *vacillata*; the rough hairy clothing of the ♂ underside wanting; markings much as in *vacillata*.

Underside similar, but generally less definitely marked and duller; forewing proximally with more or less glossy purple-grey suffusion, hindwing proximally weakly marked.

Htawgaw, July 1923, 5 ♂♂, 2 ♀♀ (including the type ♂), August 1923, 2 ♀♀ Hpimaw Foot, early July 1923, 1 ♀; Hparè, September 1923, 1 ♀ (rather worn).

Some aberrations—including the Hparè example—have the terminal borders more or less narrowed, sometimes recalling those of *impexa* Butl. or *paraula* Prout.

Subfam. LARENTIINAE.

* 57. *Eschatarchia lineata* Warr.

Eschatarchia lineata Warr., *Nov. Zool.*, i, 395 (1894) (Japan).

Hpimaw Fort, June 1923, 1 ♂.

A very interesting capture. Warren's type was provided with inexact data, but there can be no question of a false locality, as well authenticated specimens are known from that country, though I think only from S. Hondo and Kiushiu. It may now be looked for from the mountainous parts of Southern China.

* 58. *Chalyboclydon flexilinea* Warr.

Chalyboclydon flexilinea Warr., *Nov. Zool.*, v, 22 (1898) (Khasis)

Htawgaw, 1 ♂ undated.

Hitherto only known to me from two Khasi pairs in the Tring Museum.

* 59. *Hastina azela stenozona* subsp. n.

♂♀. Differs from *a. azela* Butl. (*Ann. Mag. Nat. Hist.* (5), i, 403, Japan as follows:—

Forewing with the dark posterior cloud of distal area stronger, confluent with the proximal dark colouring.—*Hindwing* above with the dark band narrower and more distally placed, the white area beyond it somewhat narrowed; beneath with the proximal area, as far as the median line, dark-shaded.

Hpimaw Fort, June 1923, ♂ type, 14–18 August 1923, ♀ allotype.

It is interesting to learn that Hpimaw Fort provide a meeting place for this species and its nearest known relative *gemmifera* Moore, from which it differs in the less extreme shape of the hindwing, non-stalking of M^1 of the forewing and sometimes of the hindwing, clearer apex of forewing, etc.

* 60. *Hastina gemmifera* (Moore)

Acidalia (?) *gemmifera* Moore, *Proc. Zool. Soc. Lond.*, p. 644 (1867) (Sikkim.)

Hpimaw Fort, June 1923, 1 ♂.

* 61. *Agnibesa sanguiniplaga* (Swinh.)

Hydrelia sanguiniplaga Swinh., *Tr. Ent. Soc. Lond.*, p. 655 (1902) (Pu-tsu-fang).

Hpimaw Fort, June 1923, 1 ♂, 9–13 August 1923, 1 ♂, 14–18 August, 2 ♂♂, 2 ♀♀.

The correct generic position of this lovely little species, hitherto only known in a few examples from West China, has not yet been made out, but I assume it to belong in the immediate vicinity of *Agnibesa*, or at any rate among that small group of genera which connects the *Sterrhinae* with the *Larentiinae*.

* 62. *Xanthorhoe placida* Prout.

Xanthorhoe placida Prout, *Nov. Zool.* xxxii, 40 (1925) (Bhutan).
Htawgaw, 14, October 1923, 1 ♀.

63. *Ortholitha latifusata* (Walk.)

Melanippe latifusata Walk., *List. Lep. Ins.*, xxv, 1298 (1862) ('Hindustan').
Hpimaw Fort, June 1923, 2 ♀ ♀.

Both the specimens have vein R^2 of the hindwing arising very little behind the cell-fold, whereas in most of the north-west Indian *latifusata* which I have examined its position—though rather variable—is so divergent from that of *propinguata* Koll. (= *niphonica* Hampson.) as to have seemed to justify Hampson's placing them in different genera (cf. *Seitz Macrolep.*, iv, 165). Perhaps these Burmese specimens represent a new race, but I do not at present see anything except the (inconstant) venation on which to found it. *O. latifusata* inhabits the North-west Himalayas and the mountains of West China and may be expected from unexplored Tibet. I have recently (*Nov. Zool.*, xxix, 351-2) referred *ignotata* Stgr., from North Tibet (Koko Nor), to the present species as another race.

64. *Calostigia albigirata* (Koll.)

Cidaria albigirata Koll., in H $\ddot{u}$ gel, *Kaschmir*, iv, 489 (1848) (Masuri).

Hpimaw Fort, June 1923, 1 ♂; Htawgaw, June 1923, 2 ♀ ♀.

A widely distributed Himalayan species and it even seems doubtful whether *serpentinata* Led., from the Altai, differs materially.

65. *Apithecia viridata* (Moore)

Cidaria viridata Moore, *Proc. Zool. Soc. Lond.*, p. 661 (1867) (Darjiling).

Htawgaw, April-May 1923, 2 ♂ ♂, 2 ♀ ♀; Hpimaw Fort, June 1923, 2 ♂ ♂, 2 ♀ ♀, early July 1923, 1 ♀.

The Hpimaw specimens are rather wasted but seem to belong to this variable species, though their facies slightly recalls that of *divergens* Butl. of North-West India. One of the Htawgaw ♀ ♀ is still more typical, except that the hindwing is rather dusky, as in the unnamed Formosan race. The other three Htawgaw examples are of a form which is so divergent that I shall not be surprised if it prove a separate species. I describe it as: *reliquifascia* form n. (? sp. div.). Smaller (17-20 mm.) Abdomen dorsally less (or scarcely) dark-clouded. Forewing rather paler green; boundary of basal patch almost straight; median area remaining predominantly of the ground-colour, with only faint fuscous irroration and fine lines (accompanying the ante- and post-median) and a small blackish distal patch between the radials, running out to an acute postmedian angle at R^3 . Hindwing also pale, beneath with the postmedian line rather more angled than usual.

This new form also occurs in Sikkim (Kurseong, May). The species, apart from North India, West China and Formosa, has also been taken in the Nilgiris.

* 66. *Cænotephria mononyssa* sp. n. (Pl. 1, fig. 19).

♂ ♀, 24-26 mm. Face without appreciable cone. Palpus $1\frac{3}{4}$, 2nd joint heavily scaled above and especially beneath, 3rd joint deflexed, well developed (especially in the ♀), but usually partly concealed by the long scaling of 2nd joint. Antenna in ♂ with joints very slightly projecting, ciliate, the ciliation fine, about 1; in ♀ minutely pubescent. Metathoracic crest rather strong; abdominal crests slight. Head and body fuscous, beneath paler; thorax and abdomen above (except end of abdomen) much clouded with black. Collar more ochreous.

Forewing with both areoles ample; R^1 stalked, but generally very shortly; dull green, banded with dark fuscous, almost exactly as in the less bright forms of *Apithecia viridata* or greener *divergens* Butl. (*Ill. Het.*, vii, 118) which latter is—at least by the characters at present used—a second *Apithecia*; median band either almost solid (except for vestiges of green about the cell-mark) or—in the name-typical form—paler and more green-mixed in its major part, leaving a characteristic *divergens*-like proximal band; postmedian lines and shading, and the fine white line beyond, only well developed in

anterior part, on the other hand with a (generally very conspicuous) thickening of the white between the radials, recalling '*Ypsipetes*' *imbrata* Guen. (*Spec. Gén. Lép.*, x, 380), a rather rare species which may prove related but has not yet been critically studied.—*Hindwing* with DC and R² rather variable, but the latter approximately central, arising behind the end of cell-vein; decidedly tinged with brown (almost as in *subrufaria* Warr., *Nov. Zool.* x, 273, East Africa), with indications of a pale postmedian band and a tendency to a darkening of the terminal area, as in the African relatives; cell-dot minute or obsolete.

Underside likewise tinged with brown, the forewing for the most part suffused with dark grey, leaving an ill-defined paler postmedian stripe, the hindwing slightly paler and more clearly marked than above.

Hpimaw Fort, early August 1923, 6 ♂♂, 9-13 August, 14 ♂♂, 2 ♀♀, 14-18 August, 18 ♂♂, 2 ♀♀. Also Omei-Shan, 1 ♂ in *Coll. Brit. Mus.* detected among series of *A. viridata*.

Unfortunately, like some of its relatives (notoriously *Perizoma taeniata* Steph.), this species seems to remain in retirement until more or less wasted; not one of the 42 is in 'bred condition,' while many are badly worn. Regarding the generic reference a few words are necessary. It really belongs to a group, hitherto uncharted, which I have begun to explore with the aid of my valued collaborator the Rev. C. R. N. Burrows and which embraces *Apithecia*, *Xenoclystia*, *Desmoclystia* and the African species which are at present referred to *Coenotephria* (cf. Janse, *Check-List S. Afr. Lep. Het.*, p. 101). As it certainly does not belong strictly to either of the first three and shows moderately close affinity to *C. prasinaria*, it seems best for the present to place it with the assemblage for which I tentatively proposed the name of *Coenotephria* (*Seitz Macrolep.*, iv, 238). The genitalia have 7th segment coremata and no labides (hence are not *Perizoma*) and have generally as a characteristic feature spines recalling those of *Lampropteryx* and *Lyncometra* (cf. Pierce, *Genit. Geom.*, pp. 62 and 63) but arising, not from the 'anellus lobes' but from distinct bosses on the central area. In *C. prasinaria*, as well as in *Xenoclystia* and *Desmoclystia*, the spine is single; in *C. mononyssa* there is a group of three. As *Perizoma* is scarcely yet definitely differentiated except by the genitalia, it is probable that some of its Indo-Australian species (at least *P. viridiplana* Bastelb., *Int. Ent. Zeit.*, iv, 342, which is very similar to the most solid-banded forms of *mononyssa*, though with shorter antennal ciliation and narrower band) will prove to belong to the present group.

* 67. *Xenoclystia nigroviridata* (Warr.)

Chloroclystis nigroviridata Warr., *Nov. Zool.* iii, 124 (1896).

Htawgaw, early July 1923, 2 ♂♂, 3 ♀♀; Chui Haw, early July 1923, 1 ♀; ? Htawgaw, April-May 1923, 1 ♀; ? Hpimaw Fort, June 1923, 2 ♂♂.

This species, according to its venation and genitalia, represents in the Indian sub-region the genera *Xenoclystia* and *Desmoclystia* of New Guinea, does not accurately fit into either, but partakes almost equally of the characters of each. As I was possibly premature in separating *Desmoclystia*, and as *nigroviridata* has neither the elongate 8th abdominal segment nor the double origin of SC¹ * of the forewing on which I principally relied, it appears preferable to employ the older generic name. The palpus is rather long and correct, the ♂ antenna shortly ciliated, SC² of the forewing is not stalked, anastomoses at a point (rarely more) with SC¹ and subsequently with SC³⁻⁵ and SC³ approaches C, exceptionally even anastomosing at a point. The specimens recorded with query agree in structure but are paler, especially on the hindwing, and present a rather different aspect. They may be seasonal and local modifications, but may well differ specifically. The July examples quite agree with the four Khasi specimens by which alone I previously knew the species.

* 68. *Xenoclystia unijuga* sp. n.

♂ ♀, 20-22 mm. Near *nigroviridata* Warr. Face paler green, more mixed with white. Palpus apparently rather rougher, blacker-mixed. Antenna of

* It is perhaps almost superfluous to point out that 'SC²' in the original diagnosis (*Nov. Zool.*, xxx, 204) was a misprint or *laps. cal.* for SC³.

♂ similarly ciliate (ciliation even, not quite 1). Thorax above pale green, mixed with black; the metathoracic crest rather strong, predominantly black. Abdomen whitish green, very heavily clouded with black on middle tergites. Foreleg partly blackened, with ends of joints pale. Mid and hindleg pale.

Forewing slightly broader than in *nigroviridata*; SC¹ arising nearer to end of distal areole (i.e. anastomosing more strongly with SC²), its course normal, not curving forward towards C; much paler than *nigroviridata* (whitish green); markings much simpler; a very faint sub-basal line, thickening a little anteriorly; a strong, slightly curved antemedian band, 1 or 1.5 mm. wide at hindmargin, narrowing a little in anterior half, sometimes slightly interrupted at C; a weaker and rather narrower postmedian mark from costa just beyond $\frac{3}{4}$, rather oblique outward, somewhat thickened behind SC³, terminating just across R¹; a small costal dash nearer the apex.—*Hindwing* white, except at costa with slight grey suffusion; a darker grey spot on R¹ midway between DC and termen.

Forewing beneath rather smoky, with the markings showing through. *Hindwing* coloured about as above, marked with a cell-spot and curved postmedian line.

Htagaw, early July 1923, type ♂; Hpimaw Fort, June 1923, 1 ♂, 24-18 August, 1 ♀; both somewhat damaged.

* 69. *Xenoclystia phaeoloma* sp. in.

♀, 18 mm. Close to the preceding, of which I at first supposed it another brood.

Forewing with SC¹ arising scarcely beyond the dividing wall of areole, curving so as closely to approach C; antemedian band straighter, edged on both sides (especially distally) with white; postmedian costal mark rather more proximal (at $\frac{3}{4}$), rather broad but much shorter than in *unijuga*, giving rise to a sinuous postmedian band consisting of two or three rows of small and weak vein-dots, which are almost invisible without a lens; subapical mark also more distal, more longitudinally extended; costal margin between the dark spots white; fringe grey, dotted and spotted with black—*Hindwing* grey, with blackish cell-dot.

Forewing beneath rather dark grey, with the markings rather blacker. *Hindwing* whitish, coarsely irrorated throughout with black-grey; cell-spot and curved row of postmedian vein-dots deep black; ill-defined black subterminal spots about the radials and close to tornus. Both wings with a black subterminal line, broken into dots and dashes; fringes with black central spots and with their tips mottled.

Htagaw, August 1923, the type only.

* 70. *Euphyia scortea* (Swinh.)

Cidaria scortea Swinh., *Tr. Ent. Soc. Lond.*, p. 493 (1891) (Khasis).

Laukhaung, March 8 1923, 1 ♀.

My long series from the Khasis is entirely ♂ — as is an overwhelming majority of the material which has come on to the market from that locality, at any rate in the *Geometridae* and *Noctuidae*. The ♀ seems to be very rare. The present example is in fine condition, rather grey and well-marked, the hindwing with the whitish subterminal line so strongly expressed as to recall some forms of *variiegata* Moore. Without more material it is unwise to opine whether it may represent a local race. I believe the species has hitherto occurred only in North India.

(To be continued.)